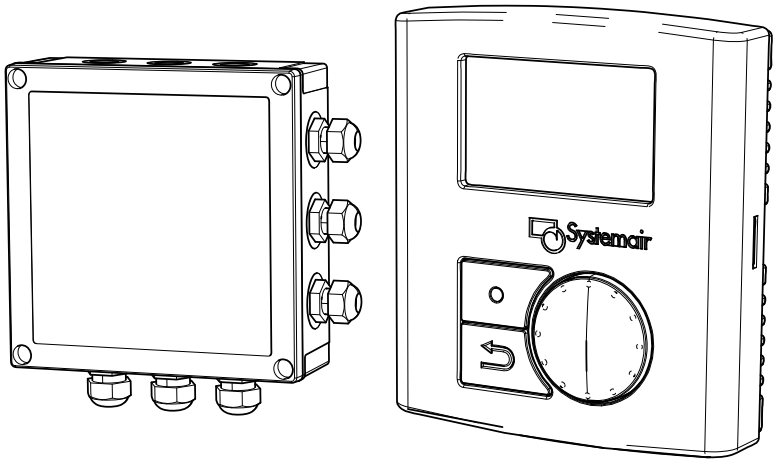
EC Vent



GB Installation instructions

-EN_GB
2012-11-20 A003

Contents

1 Declaration of Conformity 1
2 Warnings 2
3 Product Introduction 3
3.1 General 3
3.1.1 Description of the room unit 3
3.1.2 Description of the control board 3
3.2 Technical Data 4
3.2.1 Rated voltage and current 4
3.3 Transport and Storage 4
4 Installation 4
4.1 Unpacking 4
4.2 Where to Install 5
4.3 Installing the room unit and control board 6
4.3.1 Installation of the room unit 6
4.3.2 Installation of the control board 6
4.4 Description of internal parts 8
4.4.1 Control board 8
4.4.2 Room unit 9
5 Electric Connections 10
5.1 Connectors 10
5.2 Signal 10
5.2.1 Control board 10
5.2.2 Room unit 10
5.2.3 General 11
5.3 External connections wiring 12
5.3.1 Control board 12
5.3.2 Room unit 12
6 System layout 14

1 Declaration of Conformity

Manufacturer

Systemair AB
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www.systemair.com

hereby confirms that the following products:

EC Vent

(The declaration applies only to product in the condition it was delivered in and installed in the facility in accordance with the included installation instructions. The insurance does not cover components that are added or actions carried out subsequently on the product)

Comply with all applicable requirements in the following directives

- **Low Voltage Directive 2006/95/EC**
- **EMC Directive 2004/108/EC**
- **RoHS2 Directive 2011/65/EC**

The following harmonized standards are applied in applicable parts:

EN 60 730-1	Automatic electrical controls for household and similar use – part 1: General requirements.
EN 60 730-2-9	Automatic electrical controls for household and similar use – part 2: Particular requirements for temperature sensing controls.
EN 60 730-2-13	Automatic electrical controls for household and similar use – part 2-13: Particular requirements for humidity sensing controls.
EN 60 730-1 A 16	Automatic electrical controls for household and similar use – part 1: General requirements.

The complete technical documentation is available.

Skinnskatteberg, 11–03–2011

Mats Sándor
Technical Director

2 Warnings

The following admonitions will be presented in the different sections of the document.

⚠ Danger

- Make sure that the Mains supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

⚠ Warning

Protective earth (PE) and signal ground reference (GND) must not be connected to each other

Modbus should be connected with an unshielded cable connector of type RJ45.

3 Product Introduction

3.1 General

The controller will control an EC fan (0-10 V) depending on an internal time schedule or according to internal/external sensors (Temp, CO_2 etc.) or Building Management System. It consists of 2 parts, a control board (CB) and a room unit (RU). The control board will ideally be situated close to the fan while the room unit will be situated close to the user or the designated ventilation area.

This installation manual concerns the room unit and control board manufactured by Systemair AB. It consists of basic information and recommendations concerning the design, installation, start-up and operation, to ensure a proper fail-free operation of the unit.

The key to proper and safe operating of the unit is to read this manual thoroughly, use the unit according to given guidelines and follow all safety requirements.

3.1.1 Description of the room unit

The objective of the room unit is to display the information provided by the installed sensors and make it possible for the user to enter desired settings. The room unit is equipped with 2 internal sensors; Temperature and humidity sensor, which register the temperature and humidity in the location of the installed room unit. It is possible to connect 2 extra sensors to the internal connection block.

Up to 10 room units can be active simultaneously.

Note:

The installed room units can only be regulated one by one. It is not possible to perform settings on two or more room units simultaneously!

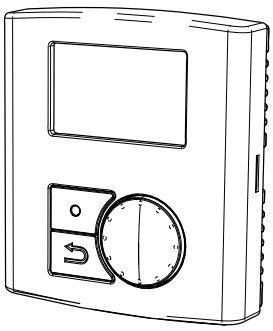


Fig. 1 room unit

3.1.2 Description of the control board

The purpose of the control board is to provide the room unit with 24 V DC mains supply, to communicate information to and from the room unit given by the sensors connected to it, and to provide the correct output control voltage to the fan or separate heater/cooler based on the settings in the room unit.

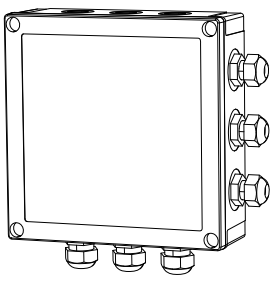


Fig. 2 control board

3.2 Technical Data

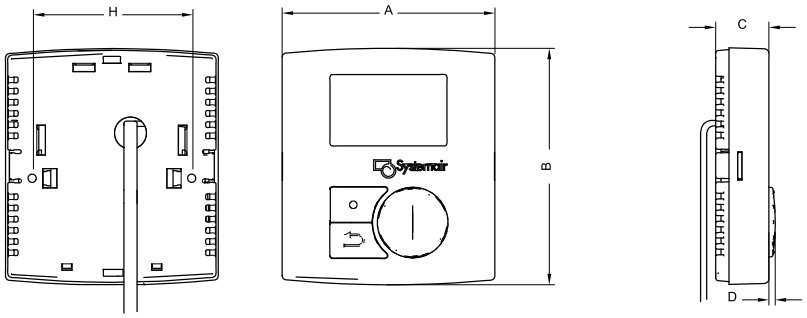


Fig. 3 Dimensions room unit

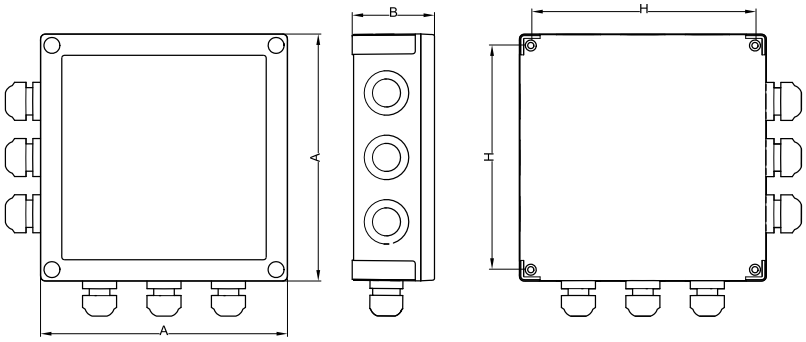


Fig. 4 Dimensions control board

Model	A	B	C	D	c/cH
Room unit	80,0	89,0	20,0	2,4	60,0
Control board	180,0	60,0	-	-	164,0

3.2.1 Rated voltage and current

- 230V 50/60 Hz
- Max 6 A supply to fan via terminals in the control board
- Max 10 A mains supply fuse

3.3 Transport and Storage

The room unit and control board should be stored and transported in such a way that it is protected against physical damage that can harm the product. The appliance is delivered complete in a cardboard box.

The room unit and control board can be stored i temperatures ranging between –20°C and +70°C

4 Installation

4.1 Unpacking

Verify that all ordered equipment are delivered before starting the installation. Any discrepancies from the ordered equipment must be reported to the supplier of Systemair products.

4.2 Where to Install

The room unit is meant for indoor wall mounting preferably in an area of the building which is representative for control of temperature or humidity, since these two functions are enclosed inside the casing of the control. If the enclosed functions are not used and the fan or heater is controlled by sensors connected to the central board, the physical location of the room unit inside the building is of less importance. Allowed maximum and minimum operating temperatures are from 0°C to +50°C.

The control board is normally mounted somewhere close to the location of the fan or heater it is supposed to control and can also be installed outdoors if necessary. Allowed maximum and minimum operating temperatures are from –20°C to +50°C.

4.3 Installing the room unit and control board

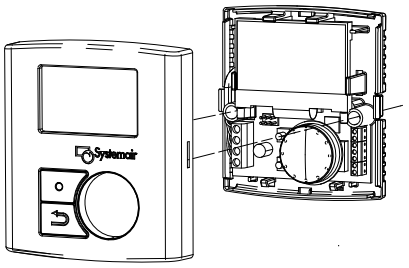
4.3.1 Installation of the room unit

1

Find an appropriate place to install the room unit. Maximum length between room unit and control board is 30 m. The enclosed 4 pole signal cable has a length of 10 m.

2

If needed, drill two holes in the wall (centre to centre: 60 mm). Fasten the room unit to the wall with 2 screws.



4.3.2 Installation of the control board

1

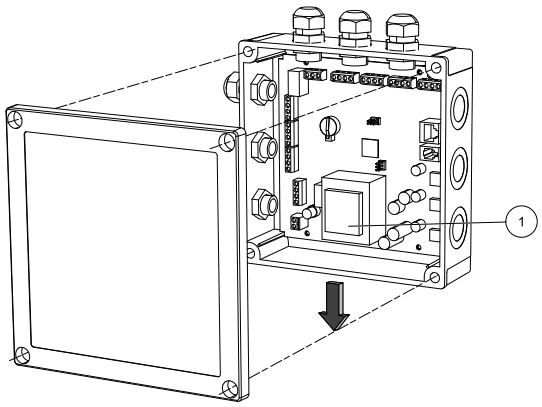
Find an appropriate place on the wall to install the control board, preferably close to the location of the fan unit.

2

If needed, drill 4 holes to fasten the control board (centre to centre: 164 mm) to the wall.

Note:

It's recommended to mount the control board with the enclosed transformer (pos.1) down side.



3

Connect sensors and the fan control (0–10 V DC) signal cables (figure 7).

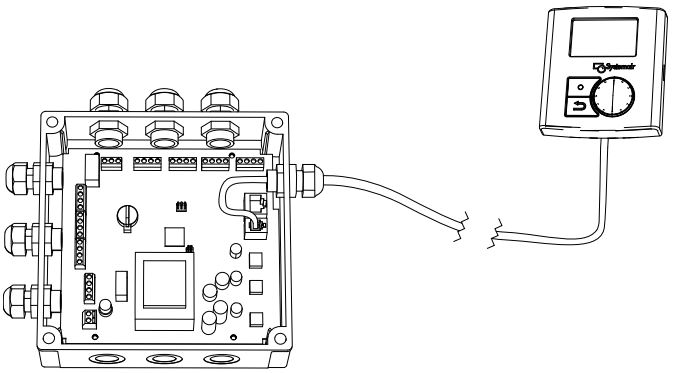
4

Connect the enclosed 4 pole signal/power cable to the modular jack on the print card.

The maximum length of the cable is 30 m. Enclosed cable has a length of 10 m .

The cable is connected to the external plug on the room unit.

If the connection plug on the room unit is not used it is possible to connect the 4 pole signal/power cable directly to a terminal in the room unit (pos. 4–7, figure 6). More information concerning the wiring (figure 8 , table 2).



4.4 Description of internal parts

4.4.1 Control board

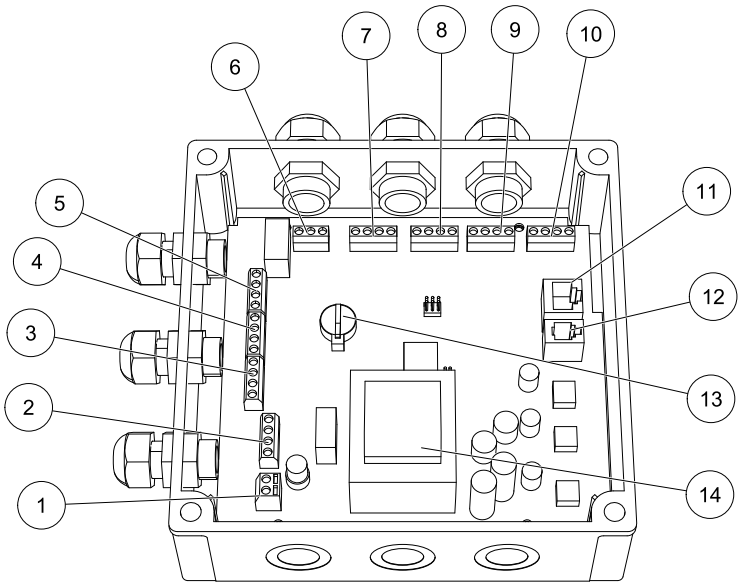
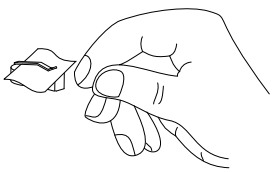


Fig. 5 Internal connections Control board

Position	Description
1	Earth connection terminal
2	Mains power supply terminal (230 V 1~)
3	Analog/Digital input 1 terminal
4	Analog/Digital input 2 terminal
5	Analog/Digital input 3 terminal
6	Alarm output terminal
7	Connection to fan terminal
8	Analog/Digital output 3 terminal
9	Analog/Digital output 2 terminal
10	Analog/Digital output 1 terminal
11	Modbus modular jack
12	Room unit modular jack
13	Backup battery[1] 
14	Transformer 230V/24 V DC

1. To be installed first when the system is started. Intended for clock backup during power failure. Dimensioned for 12 hours operation.

4.4.2 Room unit

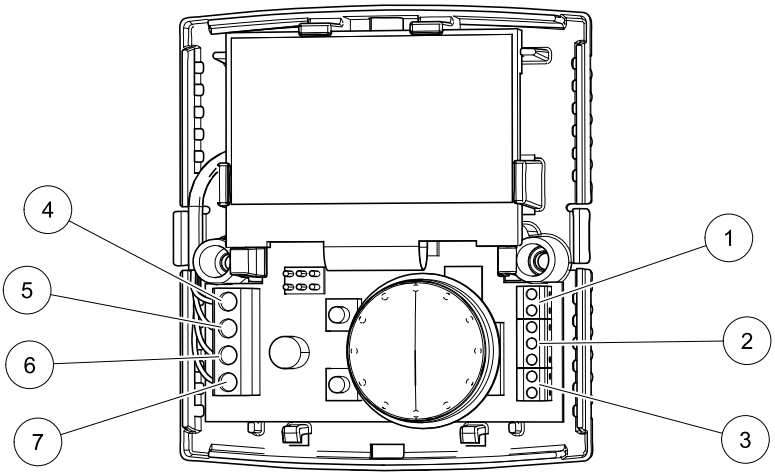


Fig. 6 Internal connections Room unit

Position	Description
1	GND reference
2	Analogue input 1 & 2 and connection to PT1000 sensor (T1)
3	24 V DC (mains supply to external PT1000 sensor)
4	Communication signal from CB (wired from factory)
5	Communication signal from CB (wired from factory)
6	GND reference from CB (wired from factory)
7	24 V DC from CB (wired from factory)

5 Electric Connections

⚠ Danger

- Make sure that the Mains supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

⚠ Warning

Protective earth (PE) and signal ground reference (GND) must not be connected to each other

Modbus should be connected with an unshielded cable connector of type RJ45.

The unit must not be put into operation before all the electrical safety precautions have been read and understood. See wiring diagram (figure 7) how to connect external equipment and mains supply to the control board.

5.1 Connectors

The following connectors are available in the control board and the room unit:

- Connector for communication between RU and CB: 4-Pole Modular Jacks
- Connector for Modbus communication 8-Pole Modular Jacks
- Connector for sensor in RU for cable with an area of 0,05-0,5 mm^2
- Other connectors: Screw terminal block for cable with an area of 0,326-2 mm^2.

5.2 Signal

The control board and room unit are prepared with the following connection possibilities:

5.2.1 Control board

- 3 Input, terminals selectable to Digital /0-10 V or PT1000
- 1 Counter input for tacho signal from motor
- 1 +10V input from motor. Max load 1,1 mA
- 3 Output, terminals selectable to Digital or 0-10 V
- 1 Output signal to motor. PWM.

5.2.2 Room unit

- 1 Input, terminals selectable to Digital /0-10 V or PT1000
- 1 Input, Digital or 0-10 V
- 1 Internal temperature sensor
- 1 Internal humidity sensor

5.2.3 General

5.2.3.1 Outputs

0...10 V	DC, 1 mA, short-circuit protected tolerance ±5%.
Digital	24 V DC, I_{sink} 50 mA.
Alarm	Relay 1-pol no/nc <30 V AC/DC 500 mA cosφ >0,95.

5.2.3.2 Inputs

0...10 V DC	>100KΩ Polarity and over voltage protected <30 V, tolerance +-5%.
PT-1000	Temperature range - 30.. +70. Accuracy ±1°C (excluding sensor tolerances).
Digital	For potential free contacts. U <24 V DC I <10 mA.
Internal Temperature	±1°C.
Internal humidity	±5% unit. From 30-70% Rh.

5.3 External connections wiring

5.3.1 Control board

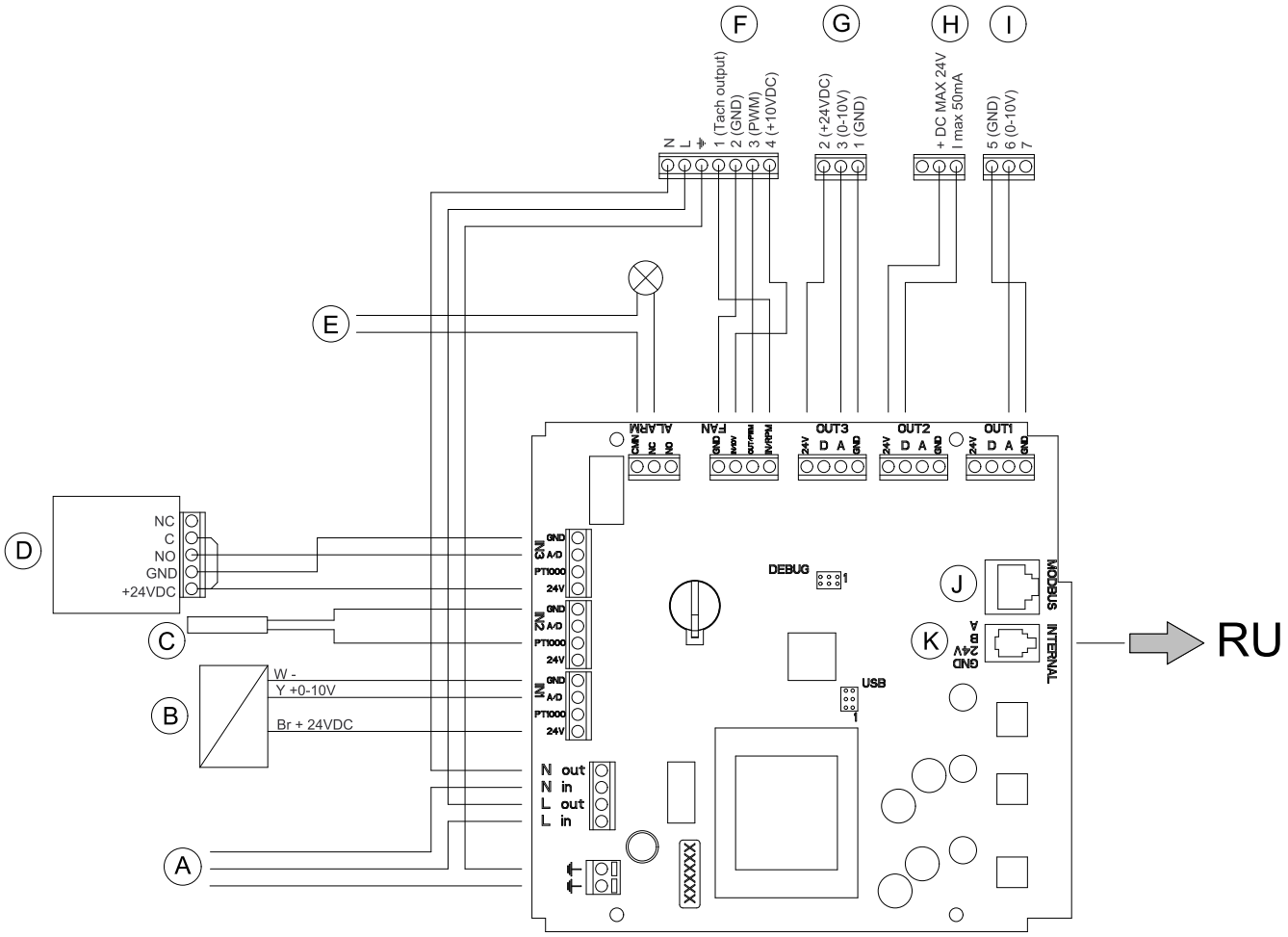


Fig. 7 Example of connection to external components on the control board

5.3.2 Room unit

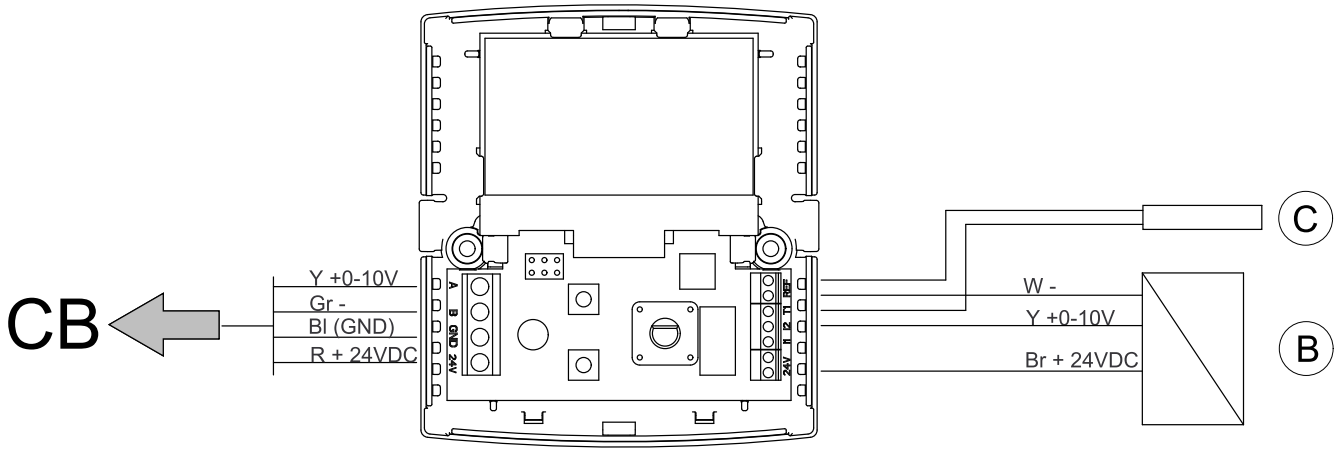


Fig. 8 Example of connection to external components on the room unit

Table 1: Description of connections

Position	Description
A	Mains supply 230 V 1~ AC (10A)
B	Analogue sensor (e.g. pressure sensor)
C	Analogue sensor (e.g. temperature sensor type PT1000)
D	Digital sensor (e.g. IR presence detector)
E	Alarm output (Max 24V AC/DC, Max 500 mA Cosφ >0,95)
F	Output to EC Fan
G	Output to analogue actuator with 24V DC supply
H	Output to digital signal (DC Max 24V, I Max 50mA)
I	Output to analogue actuator (e.g. heat regulator)
J	Connection to Modbus
K	Connection to room unit

Table 2: Description of wire colours

W	White
Y	Yellow
Br	Brown
Gr	Green
Bl	Black
R	Red

6 System layout

The EC Vent control system can have up to 5 active sensors (analogue), i.e. temperature, humidity, CO_2, pressure and airflow and up to 10 room units connected simultaneously. If a fan is regulated by e.g. 2 temp. sensors at the same time the highest signal controls the fan speed. Temperature sensors need to be of the type PT1000.

Separate regulation of heating and cooling with possibility for maximum and minimum temperature limitation in when using room sensor.

3 Digital inputs for e.g. forcing fan speed, changing set point, stop, extended running etc.

For more information about the possible operation options see “User Manual”

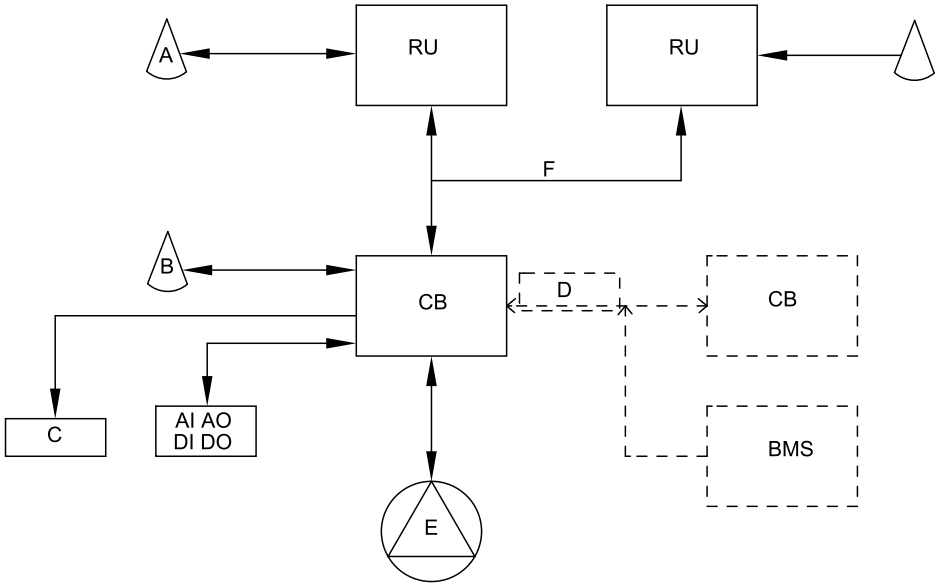


Fig. 9 Possible layout of the EC Vent system

Position	Description
A	Sensors ≤2pcs (room unit)
B	Sensors ≤3pcs (control board)
C	Alarm
D	Modbus
E	EC fan
F	Internal bus
RU	Room unit
CB	Control board
AI AO DI DO	Analogue in and outputs, alternatively Digital in- and outputs
BMS	Building management system

Systemair AB reserves the right to make changes and improvements to the contents of this manual without prior notice.

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